

Punnett Squares—Step by Step

The cross between the Generation 2 (It) critters Ocean and Lucy is:

Ocean x Lucy

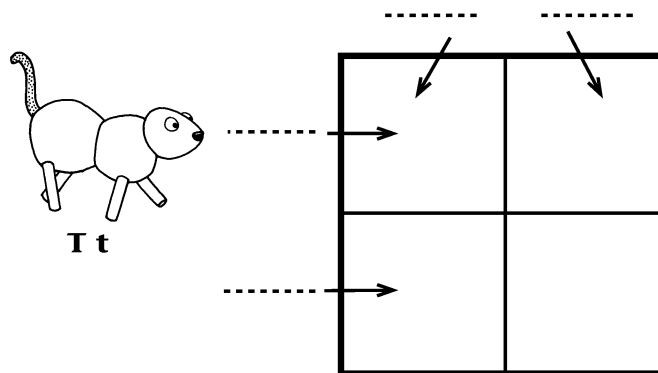
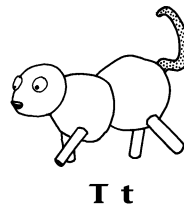
It x It

I = allele for blue tail color (dominant)

t = allele for orange tail color (recessive)

Note that while Ocean and Lucy both have blue tails, they are both heterozygous.

1. Referring to the example above from your book, complete this Punnett square for the cross between Ocean and Lucy.
 - a. Place Ocean's and Lucy's alleles on the dotted lines in the Punnett square.
 - b. Complete the Punnett square by filling in each box with the allele above it and the allele to its left.

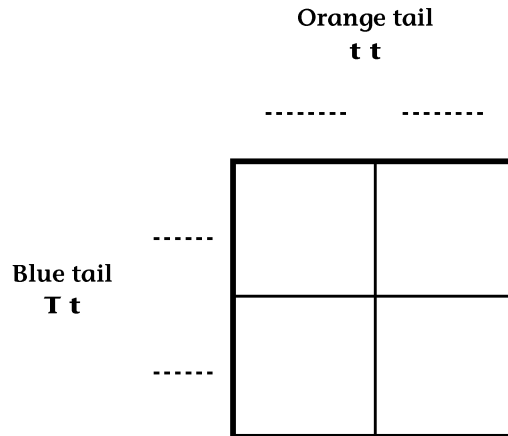


- c. Use either a blue pencil or a regular pencil to shade in the squares for offspring that will have blue tails in your Punnett square above.
- d. About what **fraction** of the offspring of Ocean and Lucy are predicted to have blue tails, according to the Punnett square?
- e. About what **fraction** are predicted to have orange tails?

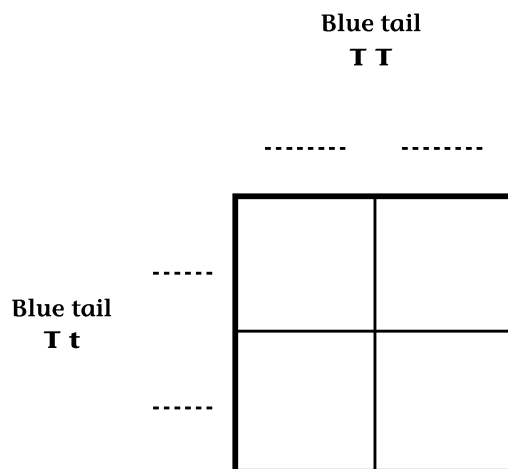
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Generation 3 includes some critters with orange tails and some with blue tails.

2. Complete this Punnett square for a cross between an orange-tailed critter and a heterozygous blue-tailed (Ii) critter.



- a. Use pencil to shade in the squares for offspring with blue tails.
 - b. About what **fraction** of the offspring are predicted to have blue tails?
 - c. About what **fraction** are predicted to have orange tails?
3. Complete this Punnett square for a cross between a heterozygous blue-tailed (Ii) critter and a heterozygous blue-tailed (Ii) critter



- a. Use pencil to shade in the squares for offspring with blue tails.
- b. About what **fraction** of the offspring are predicted to have blue tails?
- c. About what **fraction** are predicted to have orange tails?